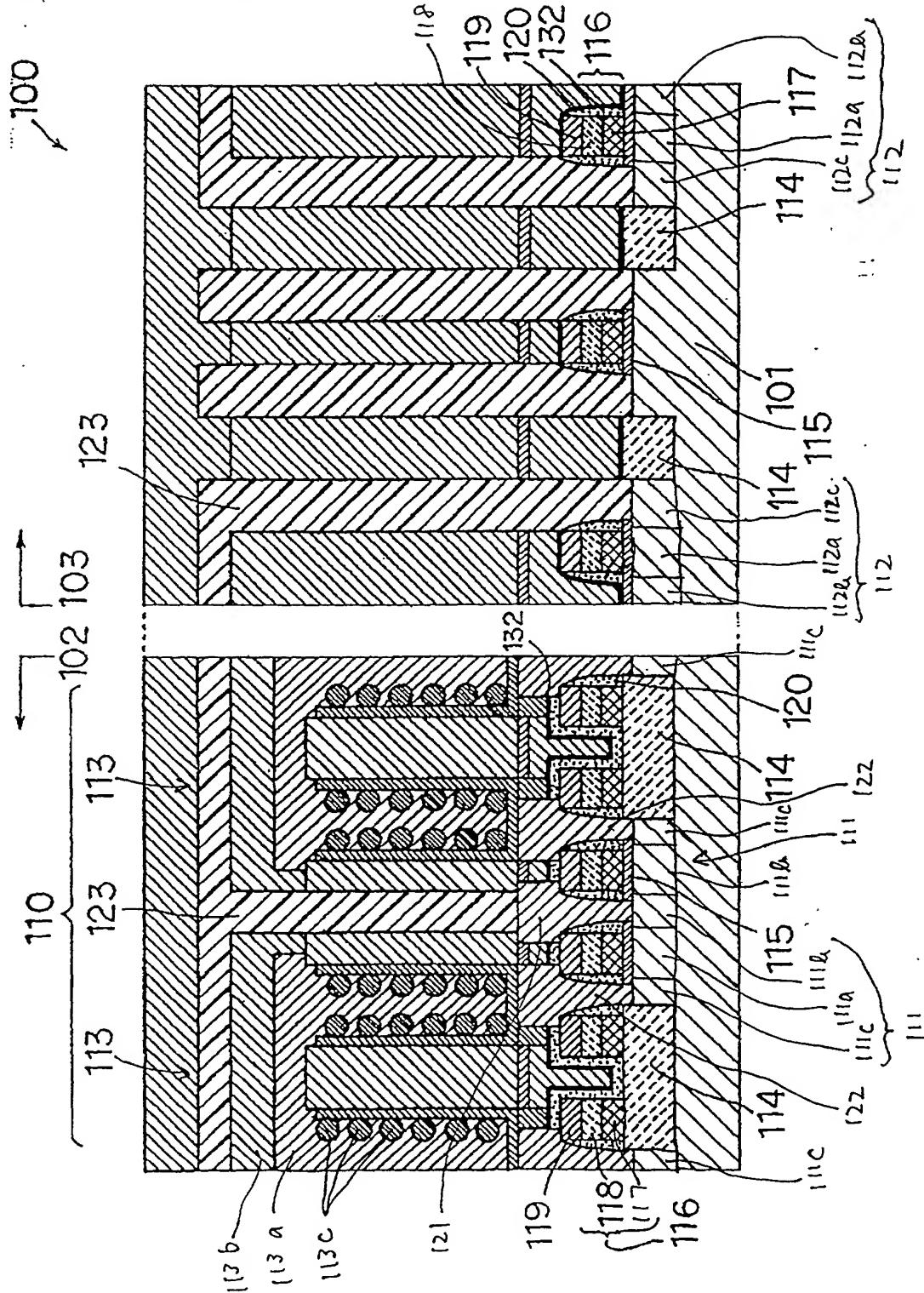


Fig. 1 (Prior Art)



AND LOW-DENSITY REGIONS OF
TRANSISTOR ELEMENTS ON SINGLE
SEMICONDUCTOR SUBSTRATE, AND
METHOD OF MANUFACTURING SUCH
SEMICONDUCTOR DEVICE

Inventor(s): Toshiyuki HIROTA, et al.

DOCKET NO.: 040373/0300

Fig. 2 (Prior Art)

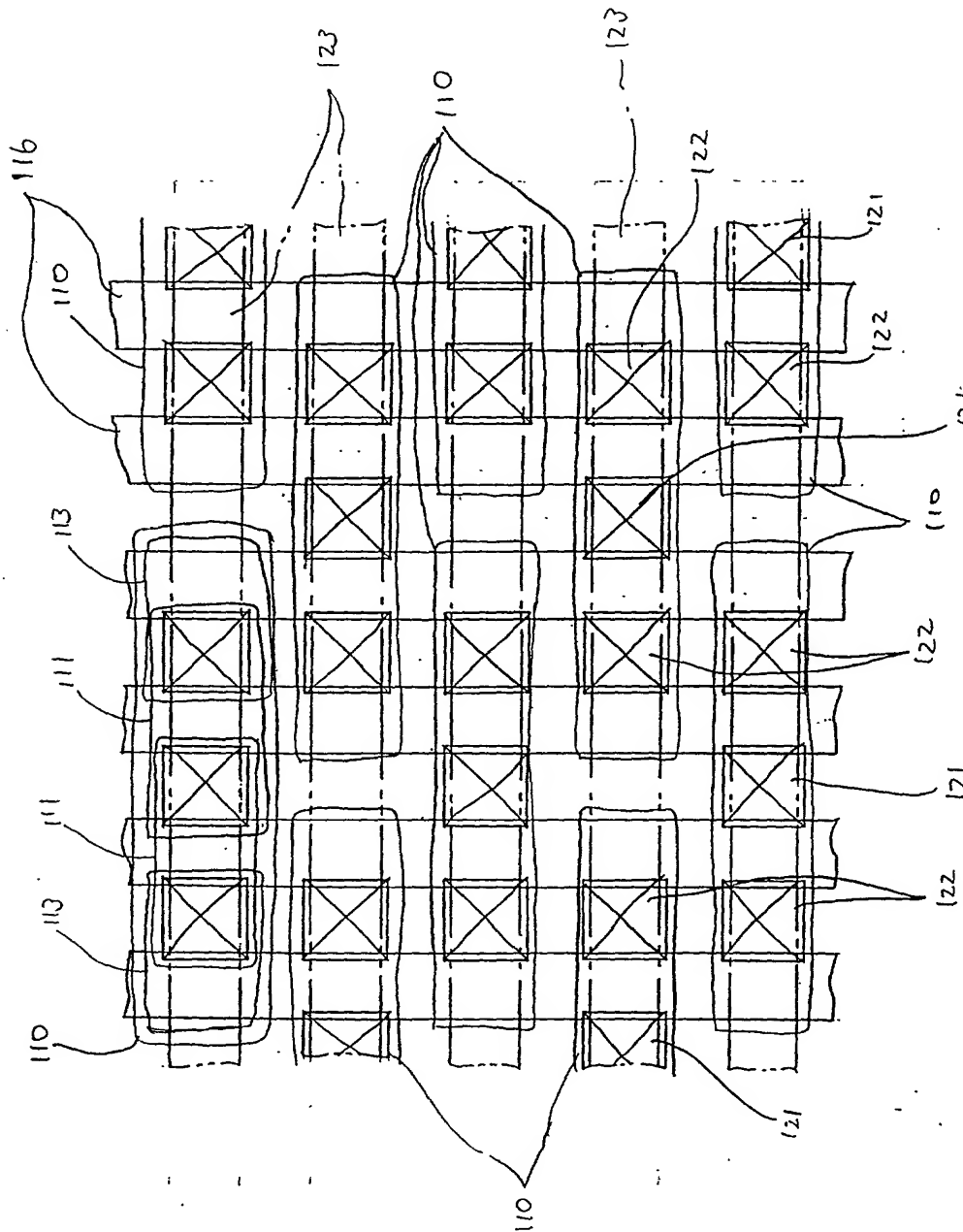


Fig. 3 (Prior Art)

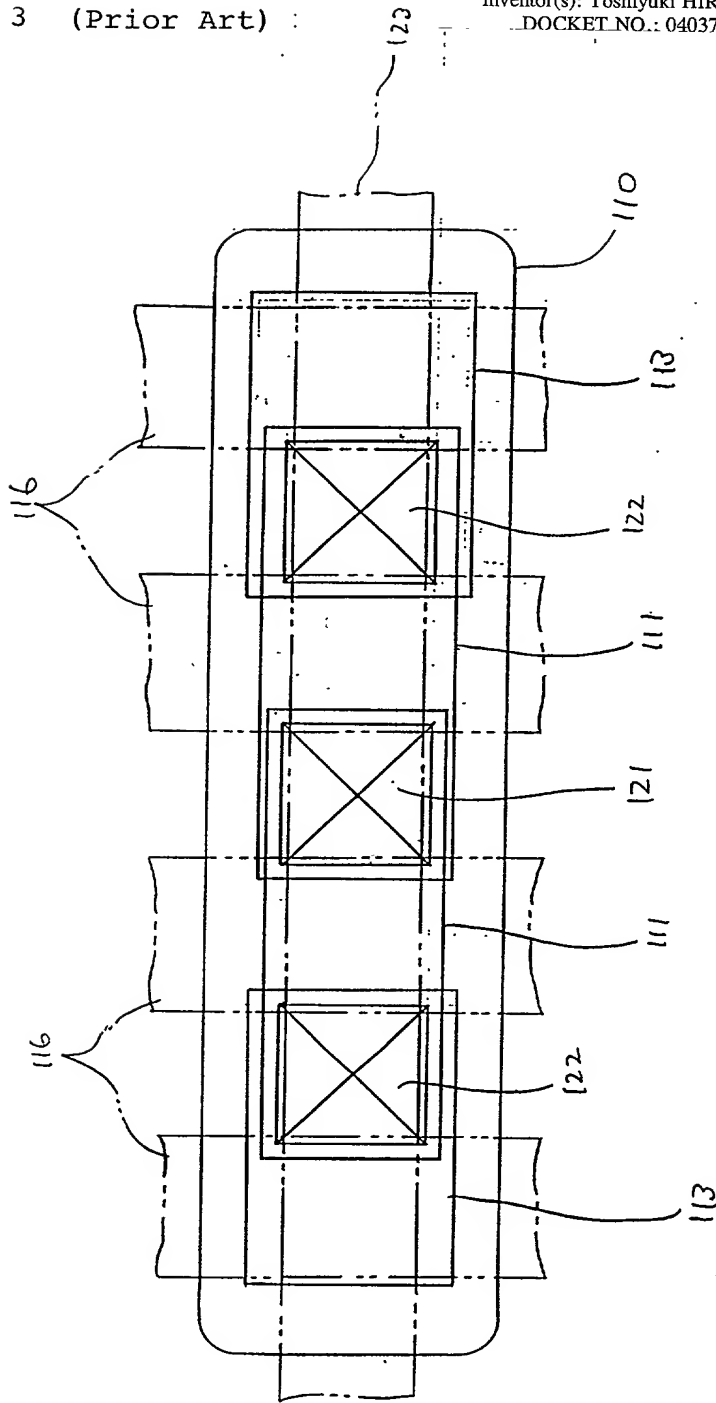
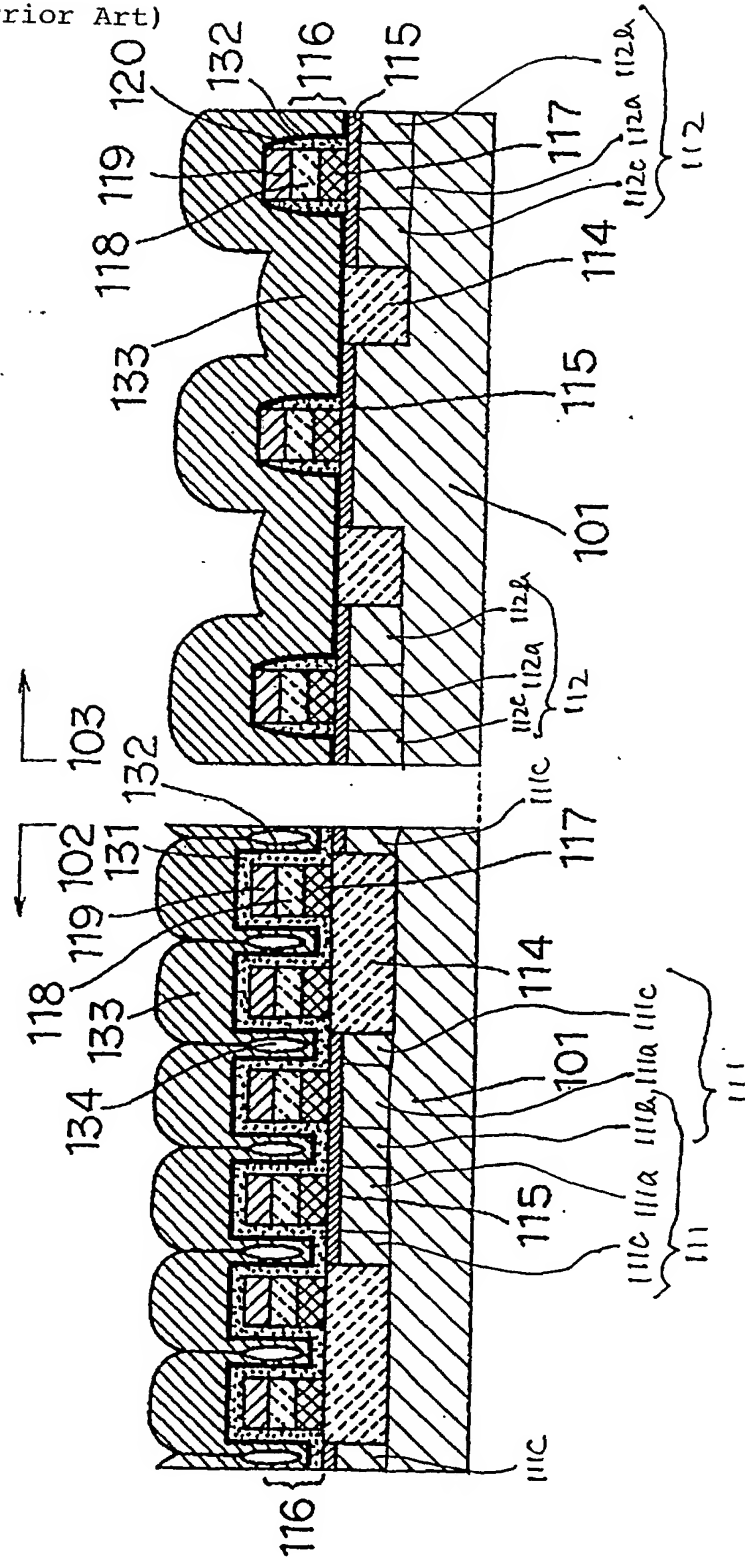
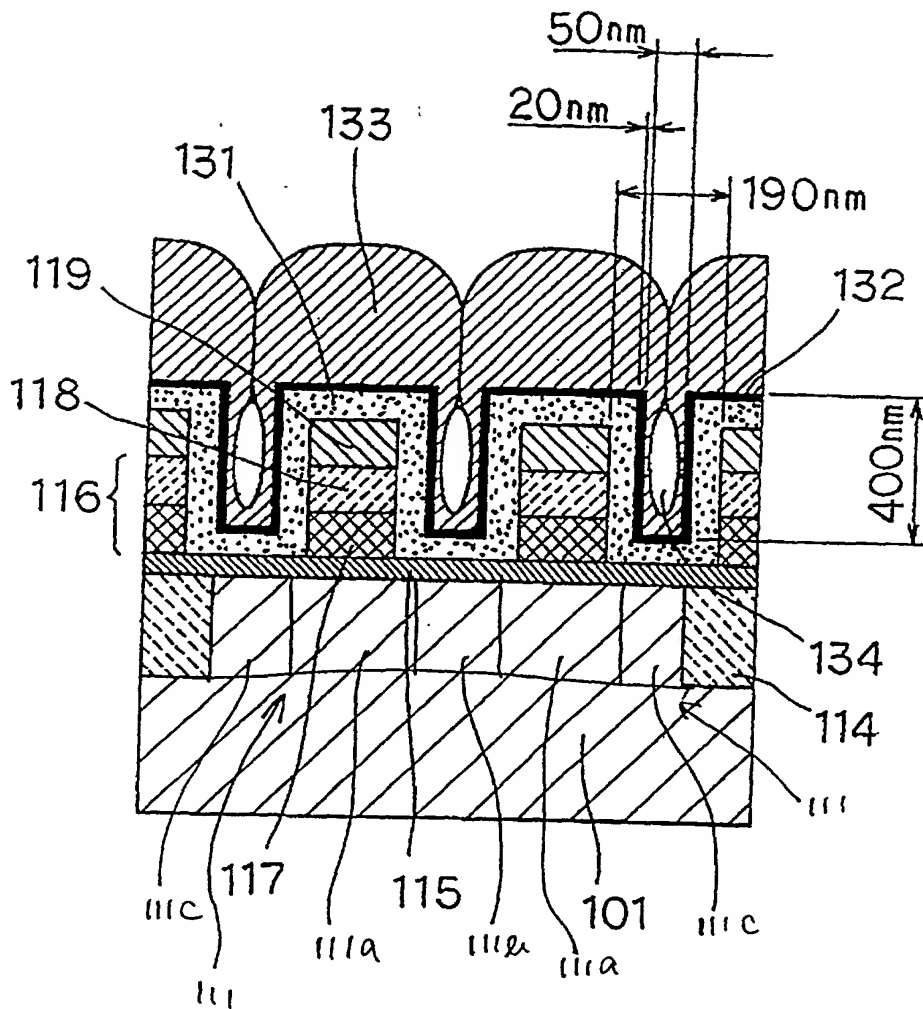


Fig. 4 (Prior Art)



Inventor(s): Toshiyuki HIROTA, et al.
DOCKET NO.: 040373/0300

Fig. 5 (Prior Art)



1106. SEMICONDUCTOR DEVICE WITH HIGH-
AND LOW-DENSITY REGIONS OF
TRANSISTOR ELEMENTS ON SINGLE
SEMICONDUCTOR SUBSTRATE, AND
METHOD OF MANUFACTURING SUCH
SEMICONDUCTOR DEVICE

Inventor(s): Toshiyuki HIROTA, et al.

DOCKET NO.: 040373/0300

Fig. 6 (Prior Art)

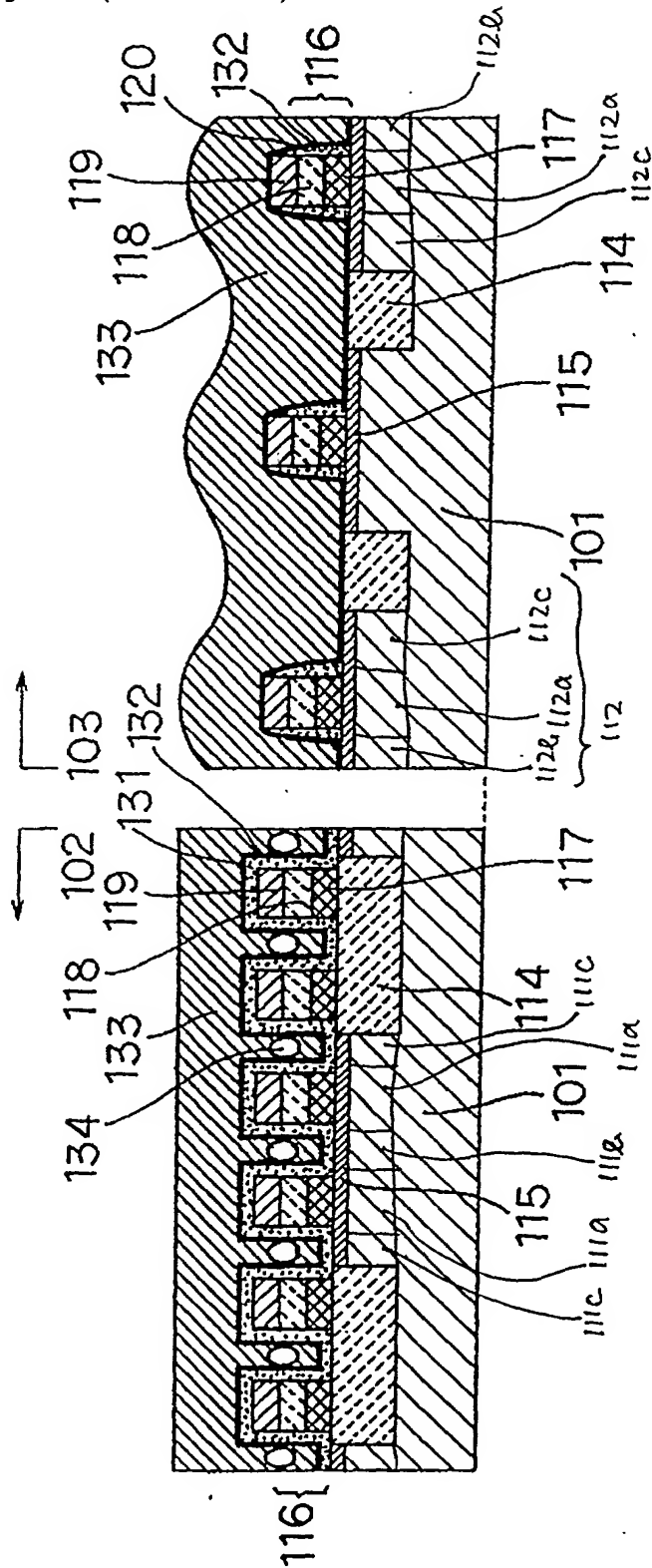


Fig. 7 (Prior Art)

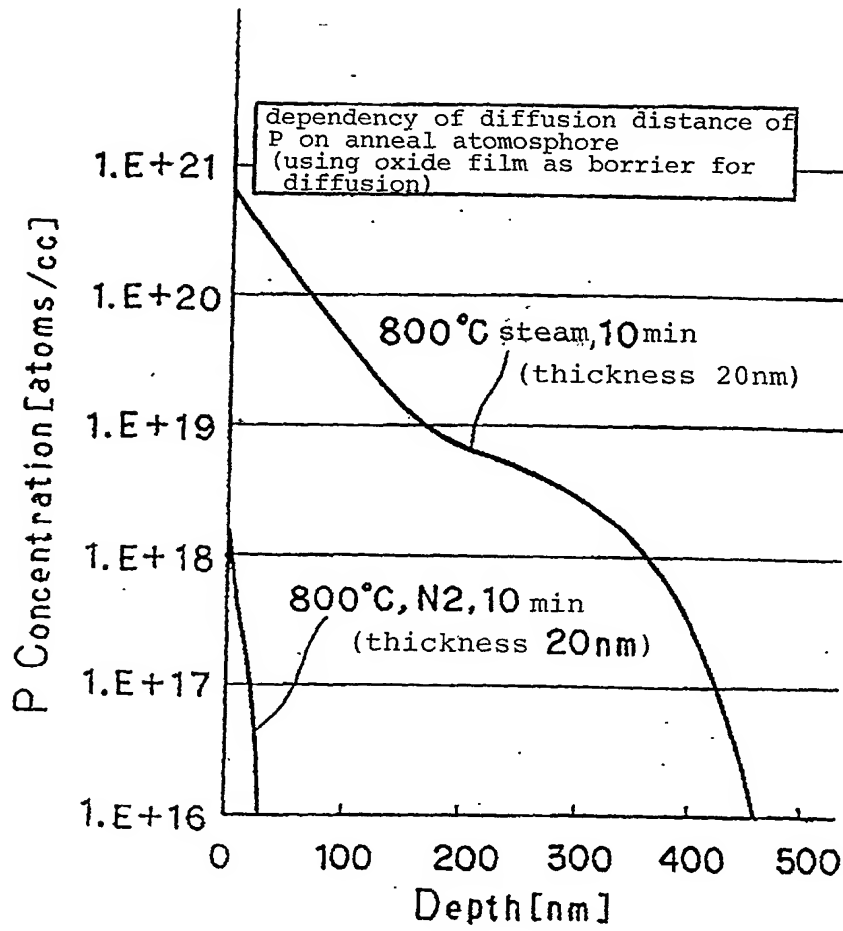


Fig. 8

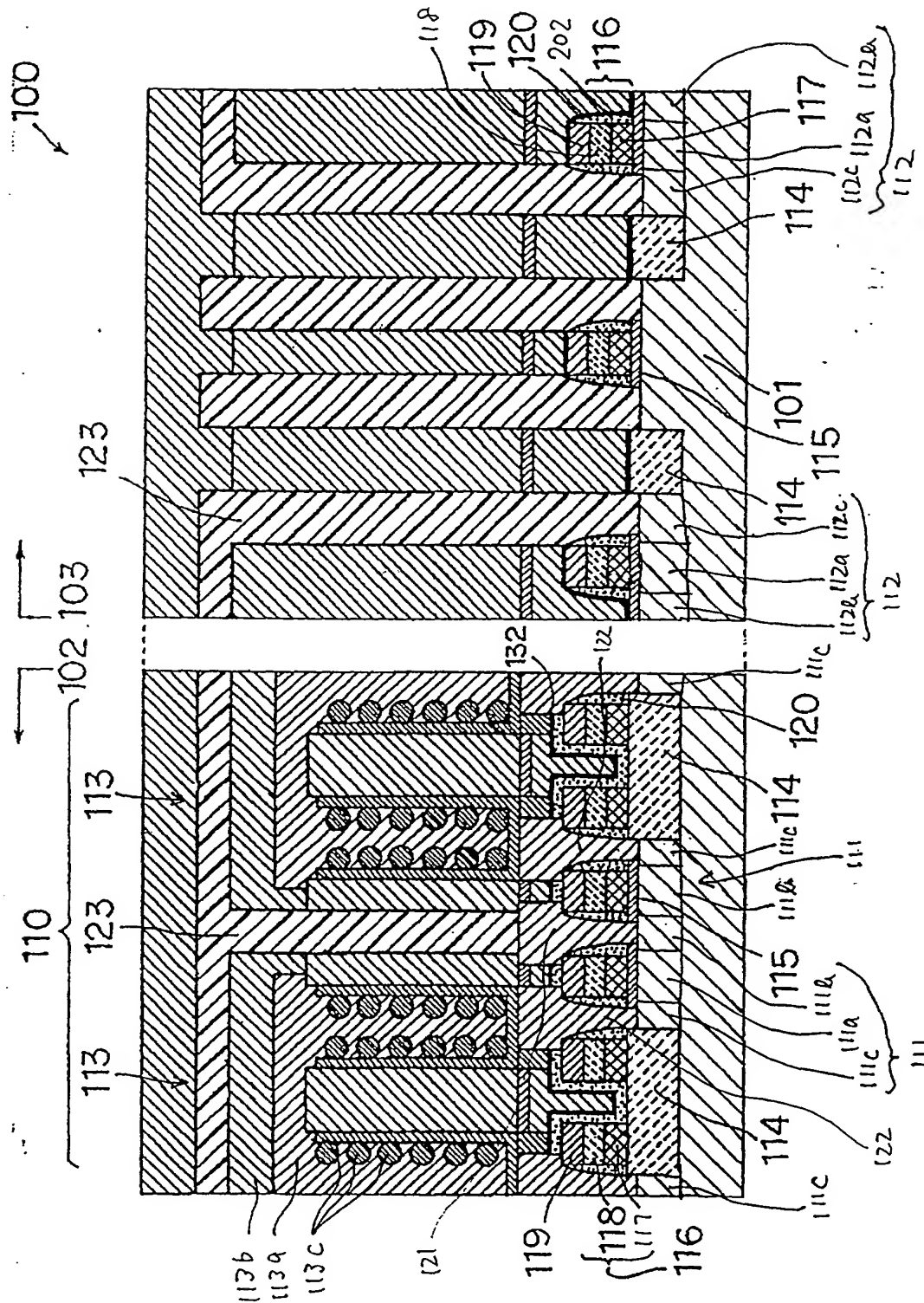


Fig. 9A

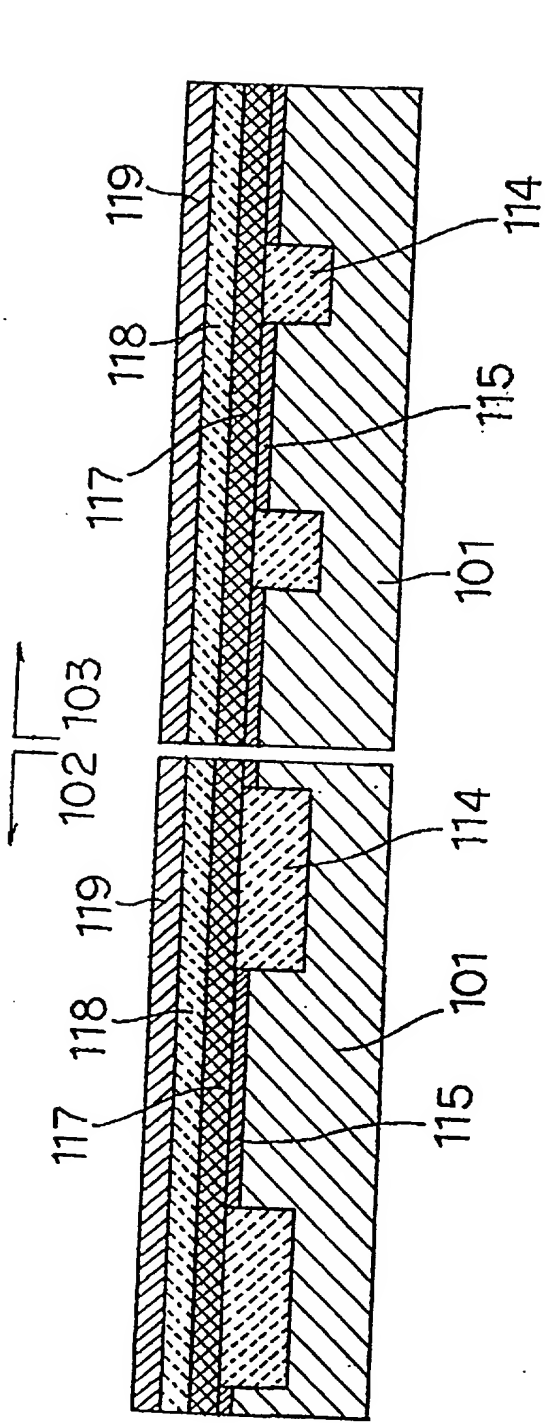
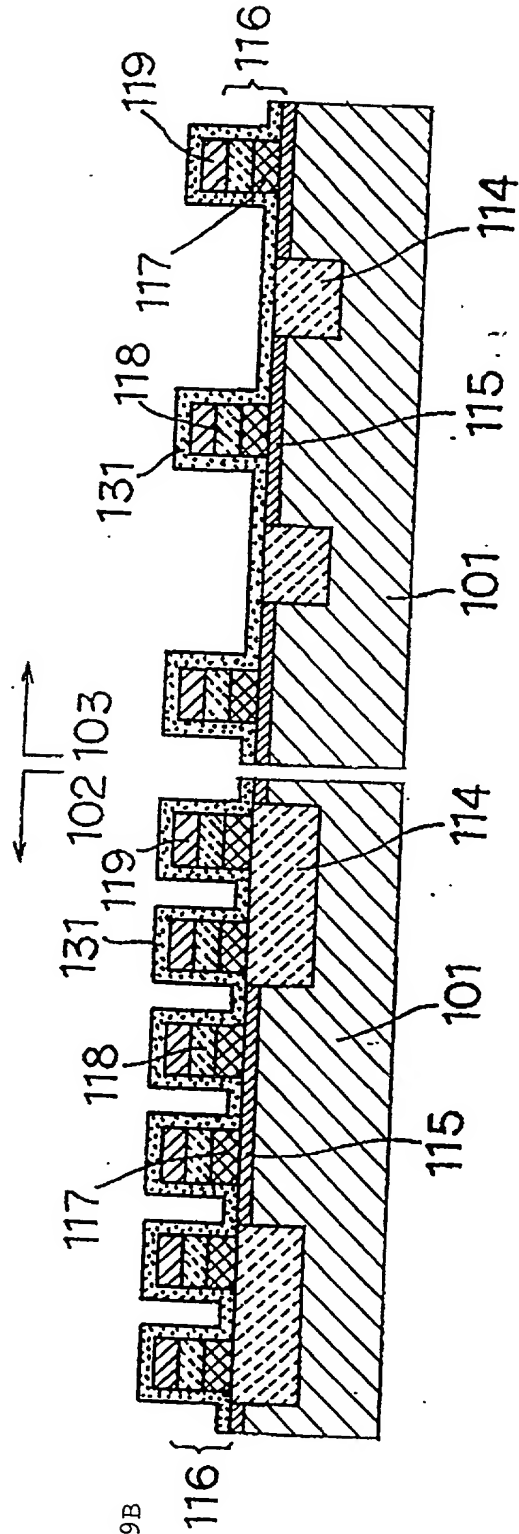


Fig. 9B



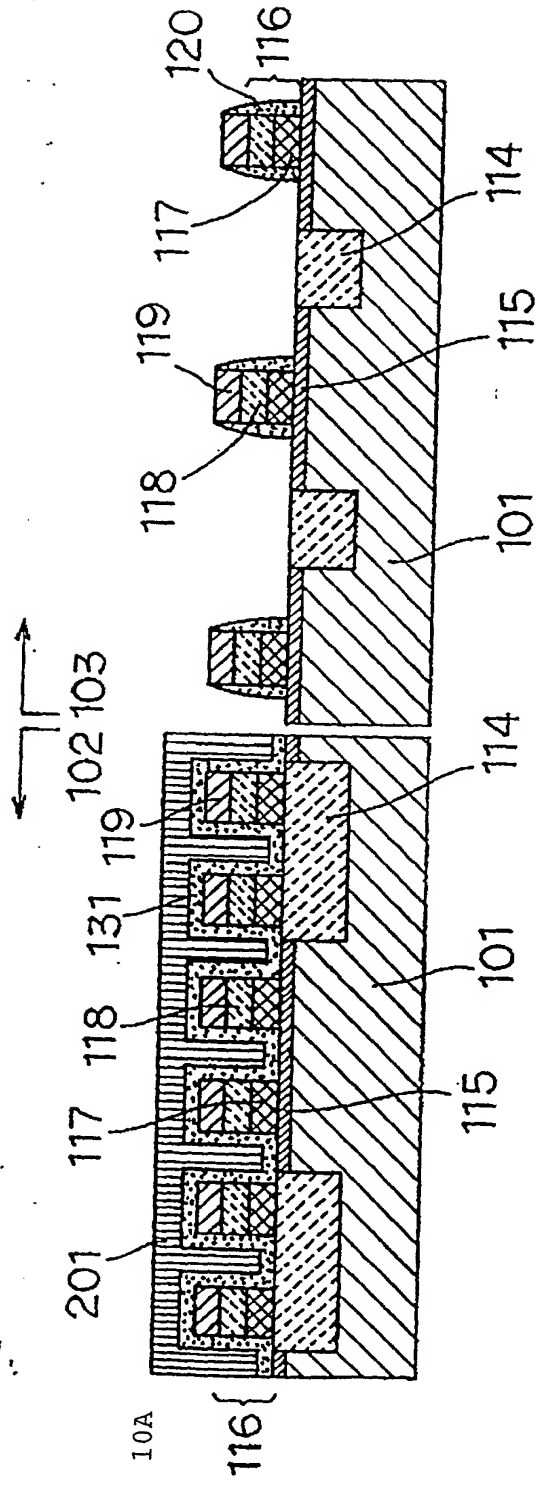


Fig. 10A

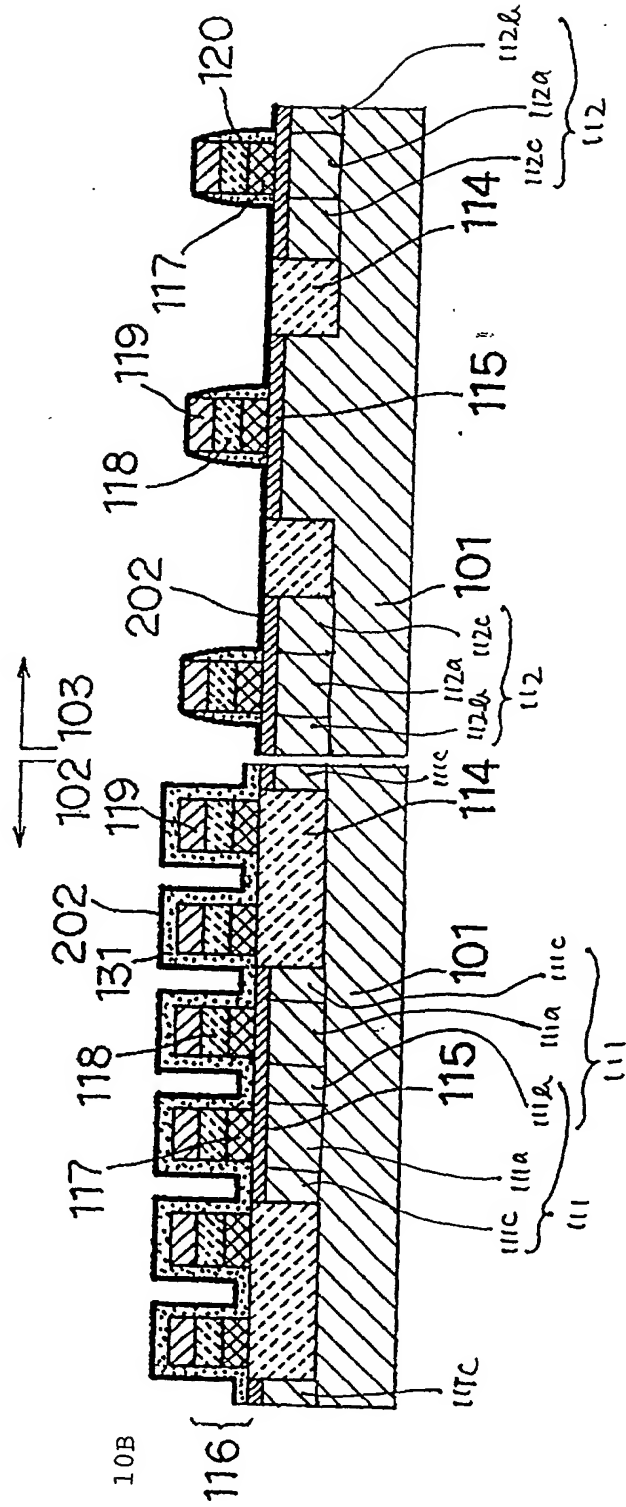


Fig. 10B

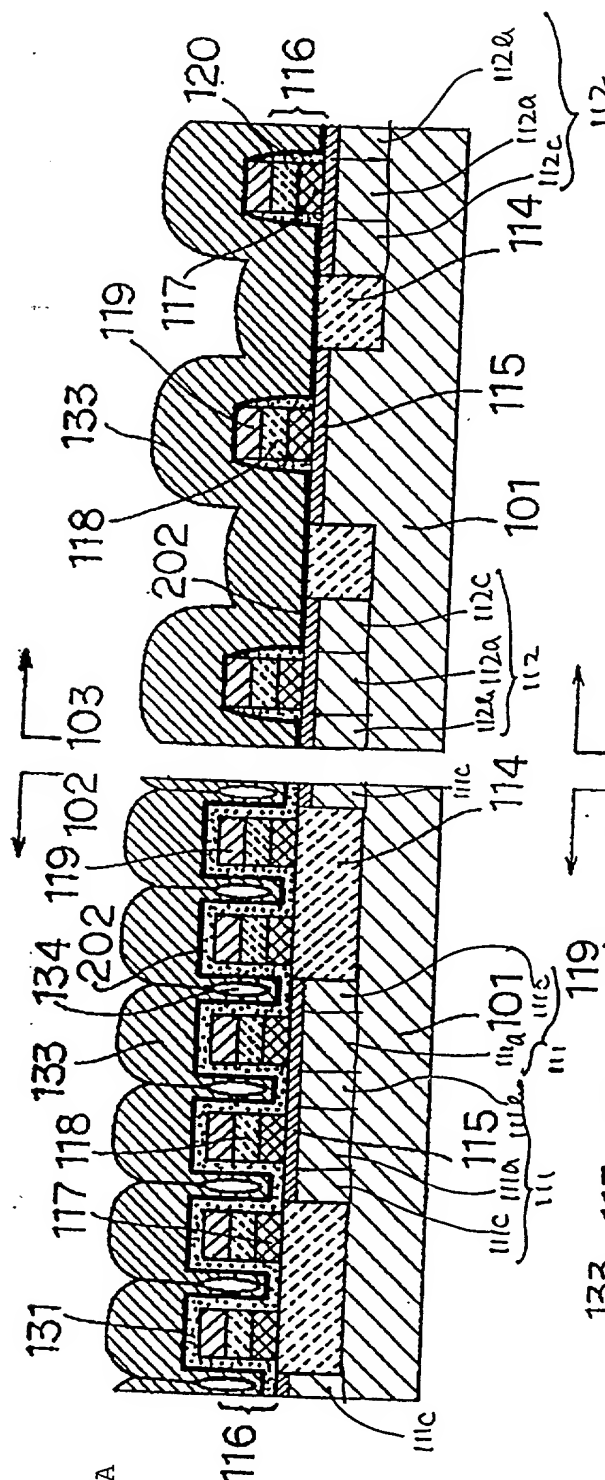


Fig. 11A

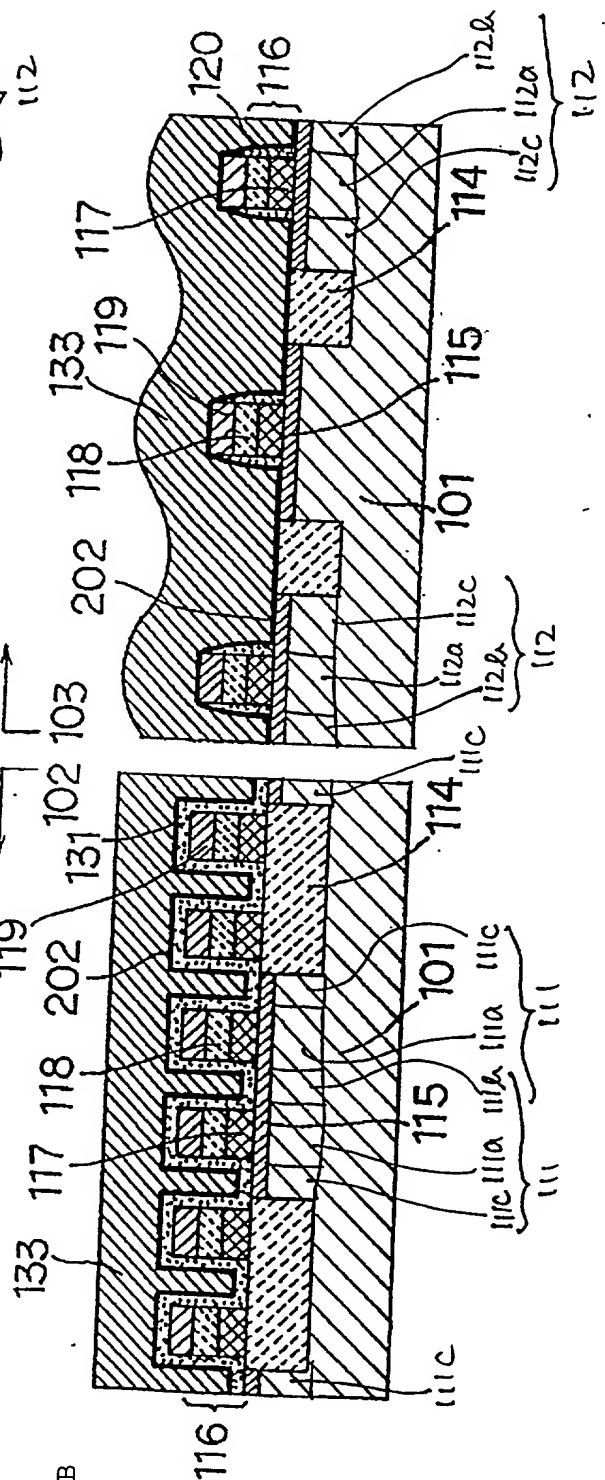
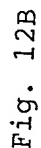


Fig. 11B



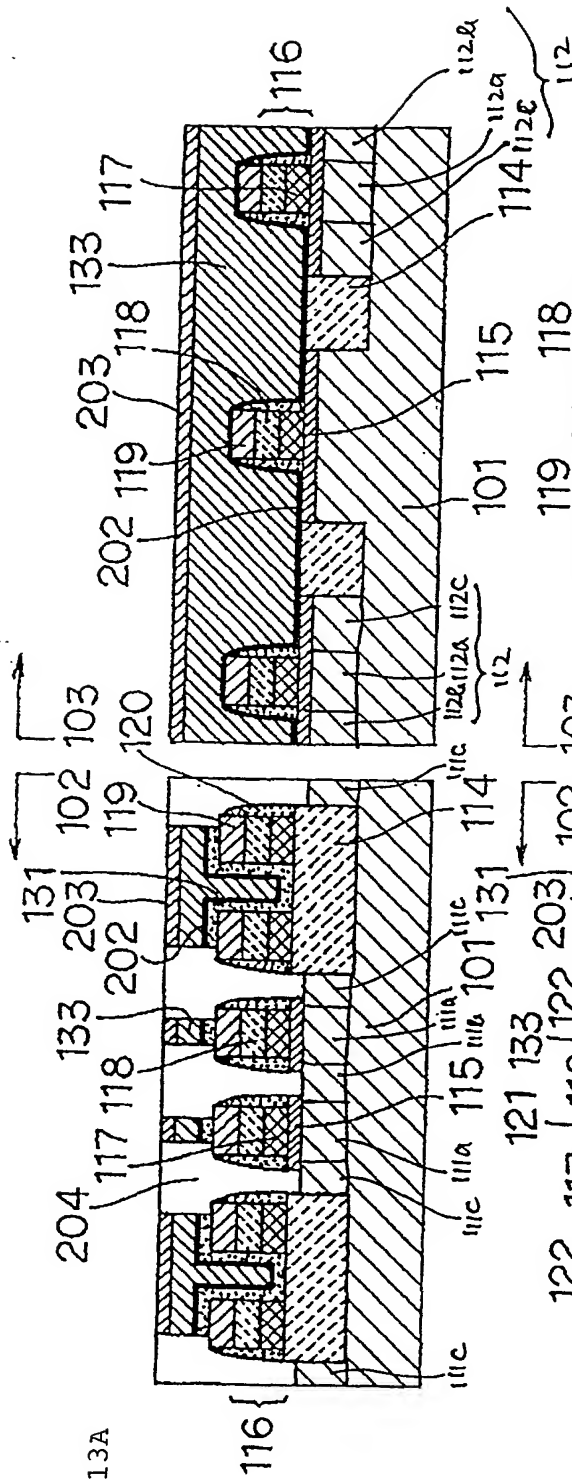


Fig. 13A

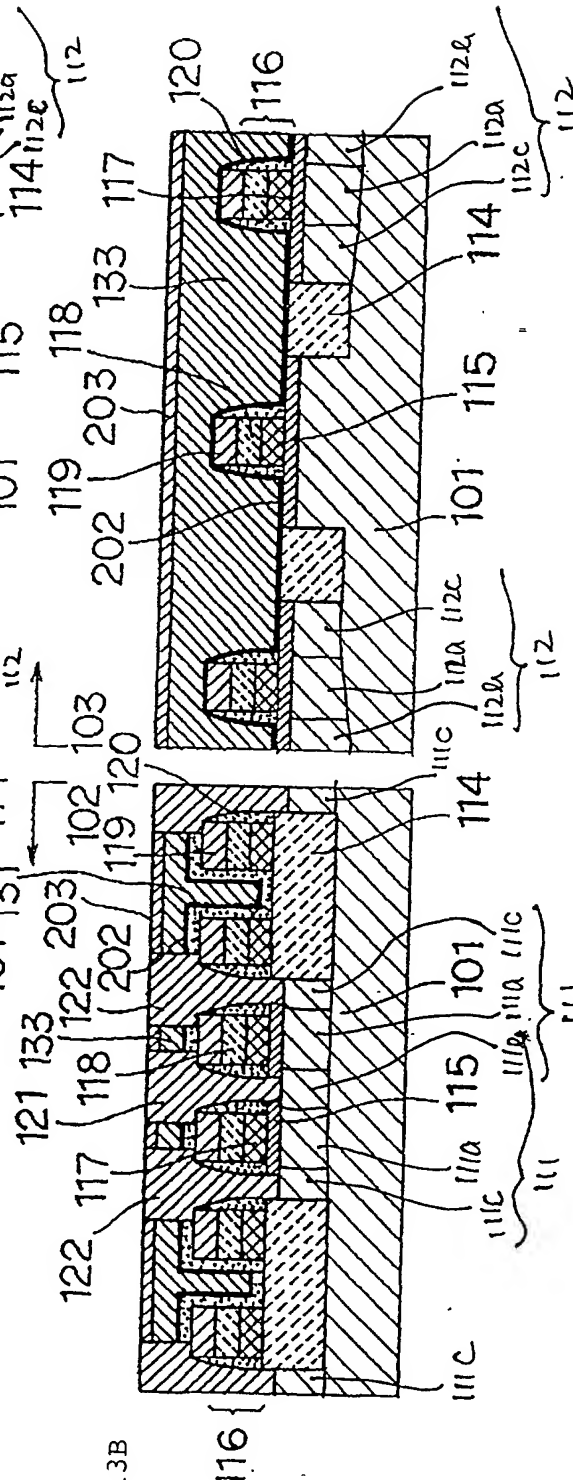


Fig. 13B

Fig. 14

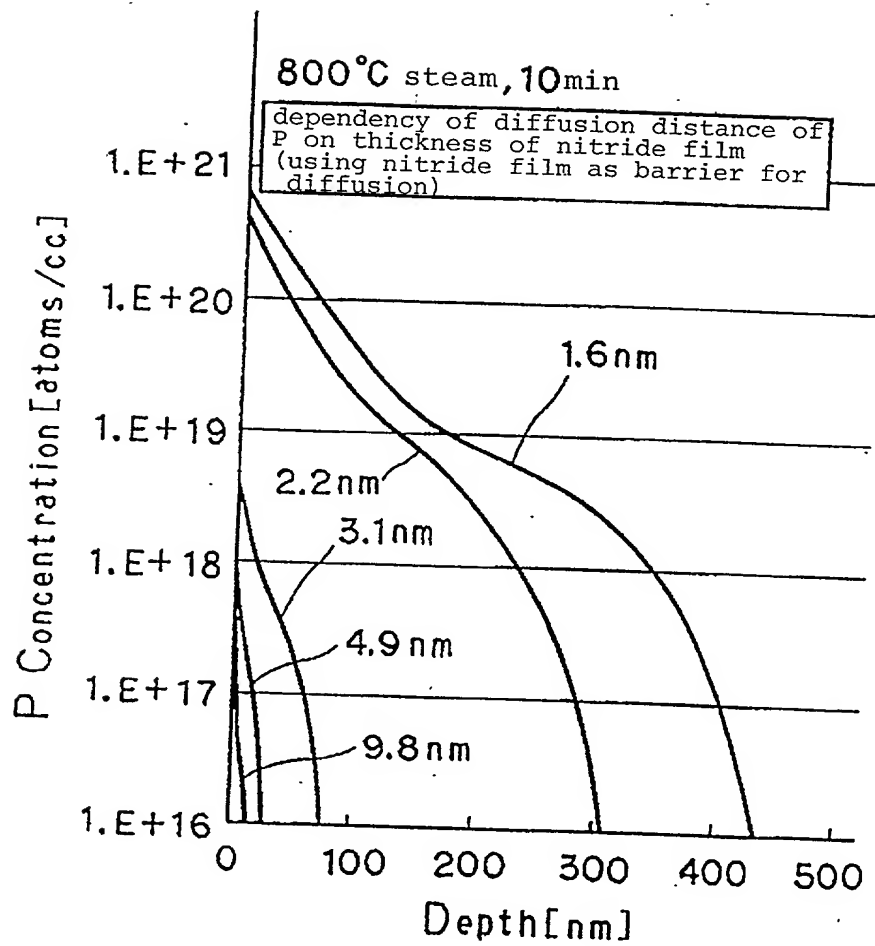


Fig. 15

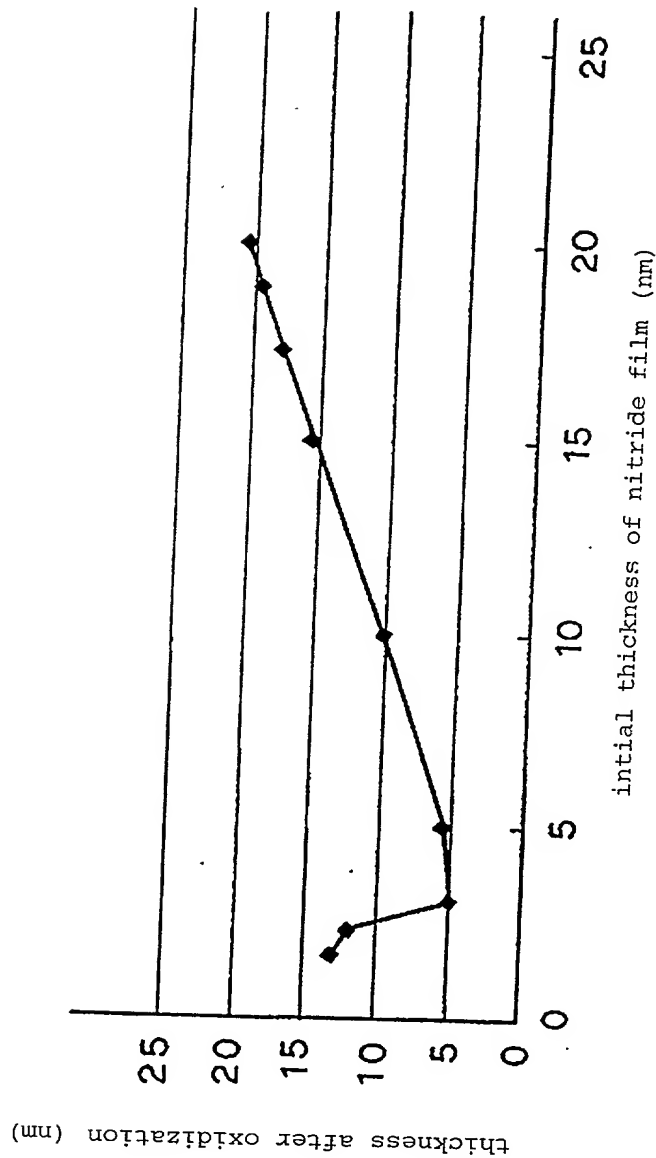


Fig. 16

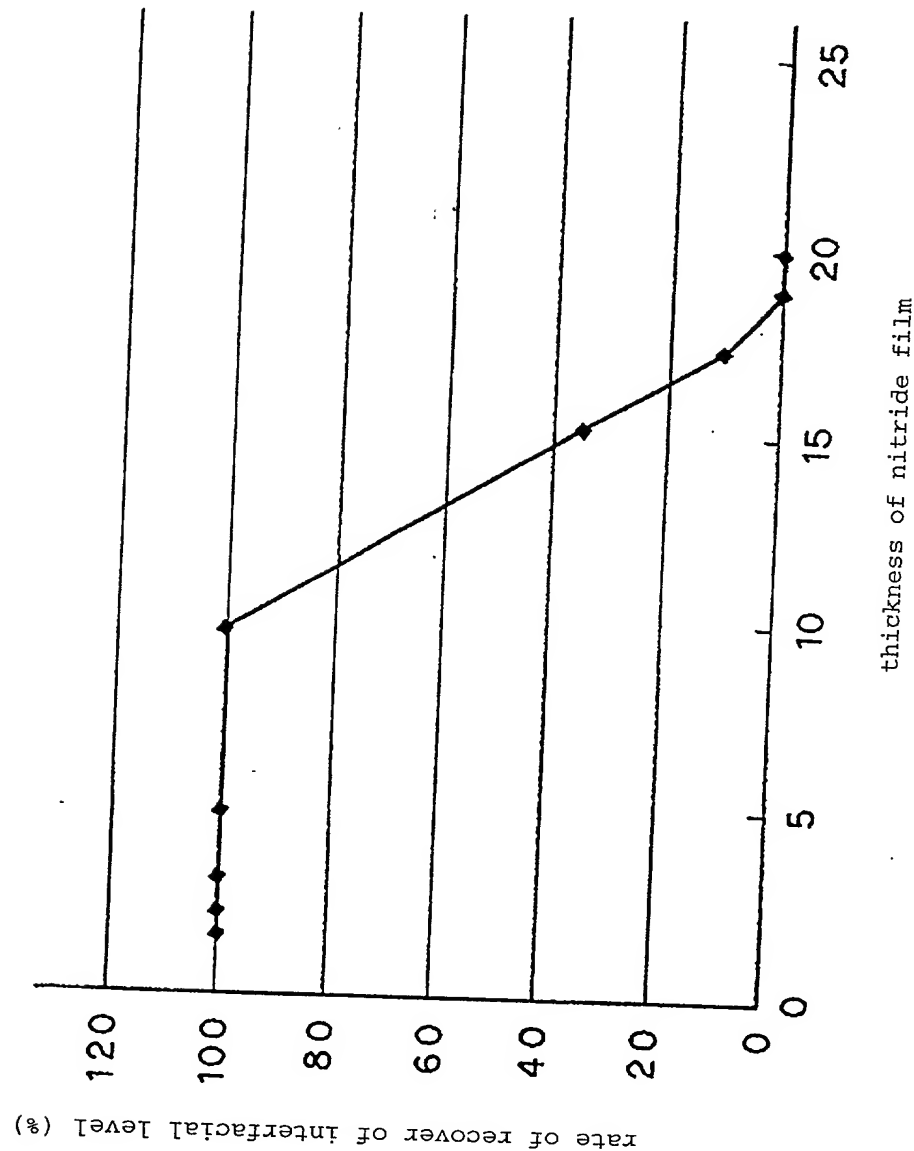
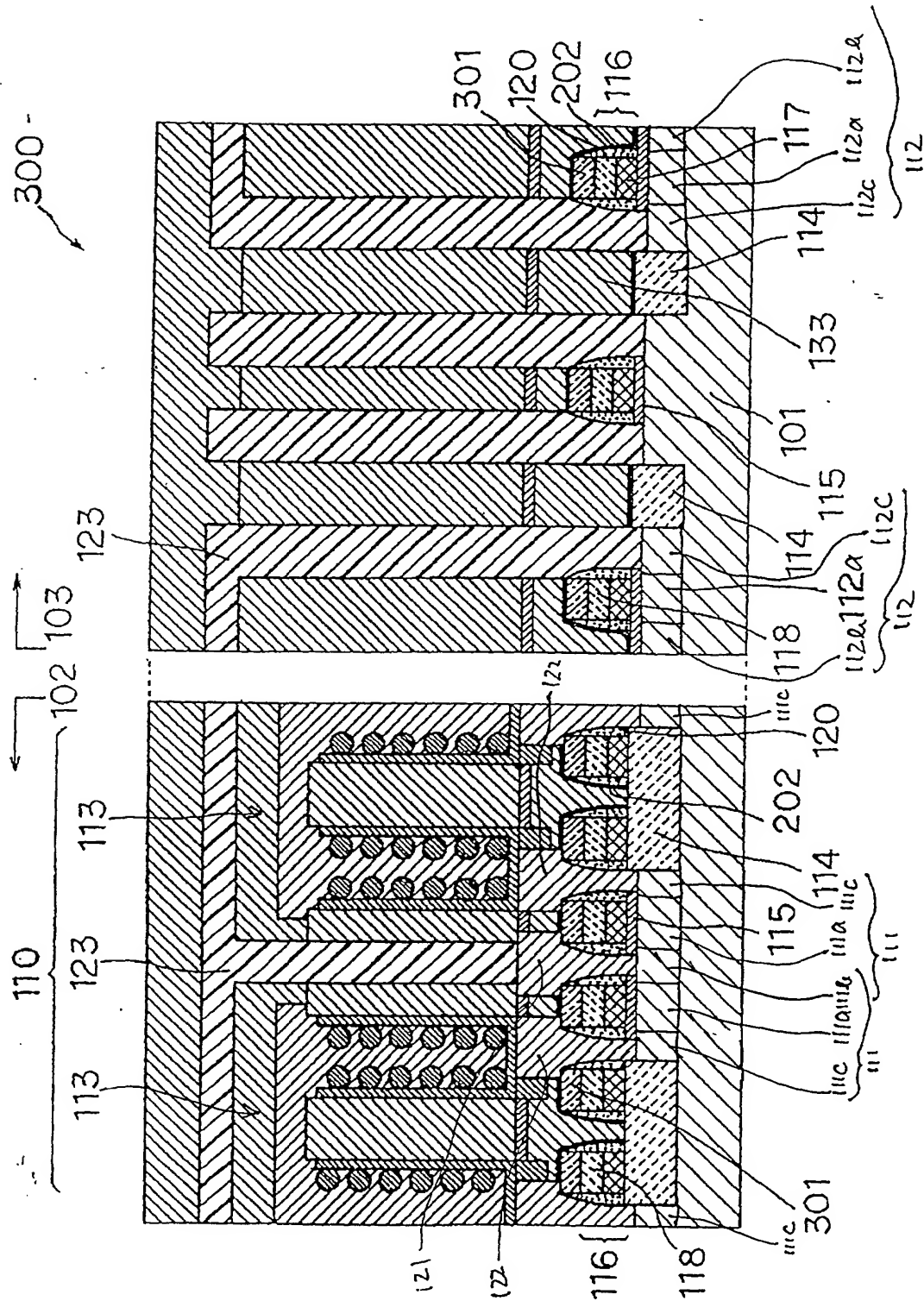


Fig. 17



040373/0300

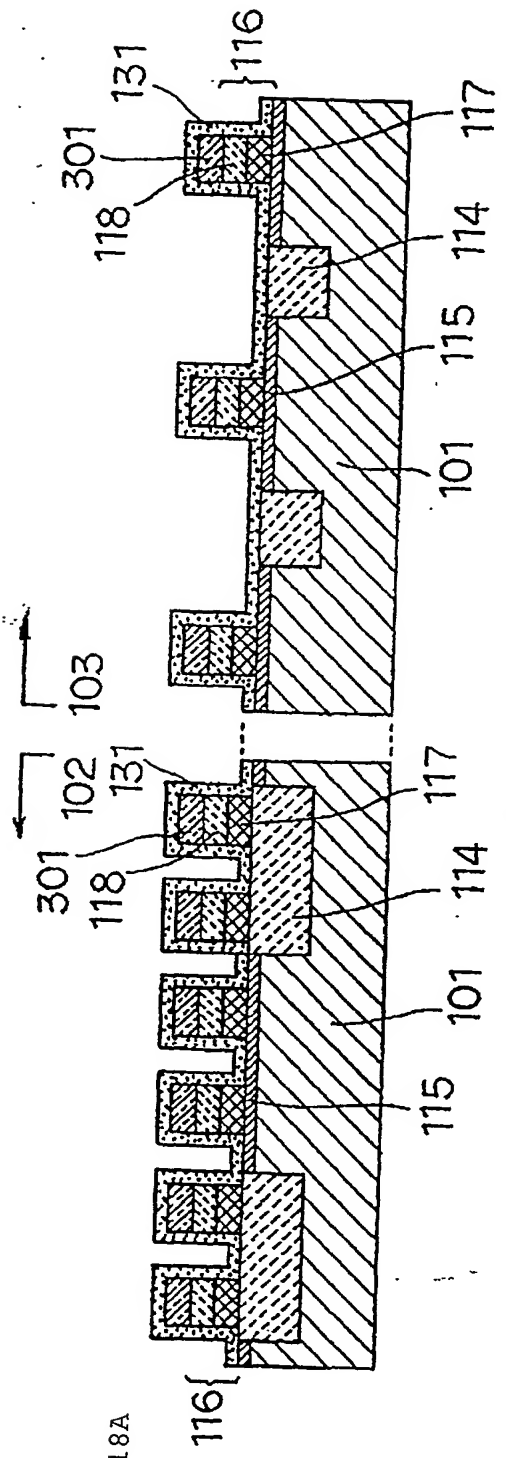


Fig. 18A

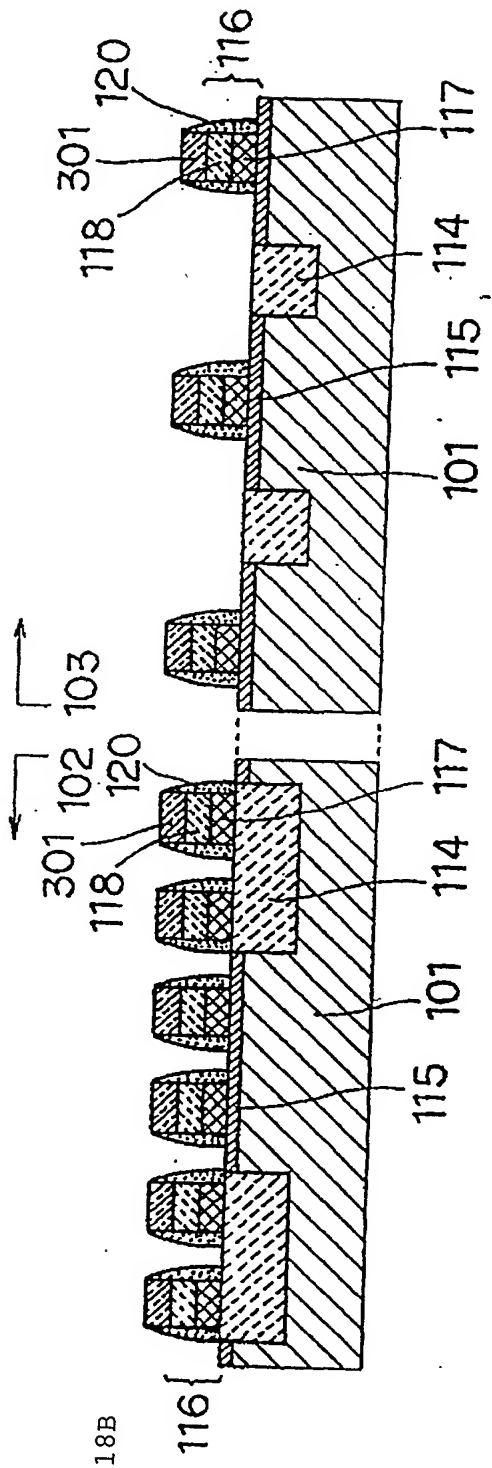


Fig. 18B

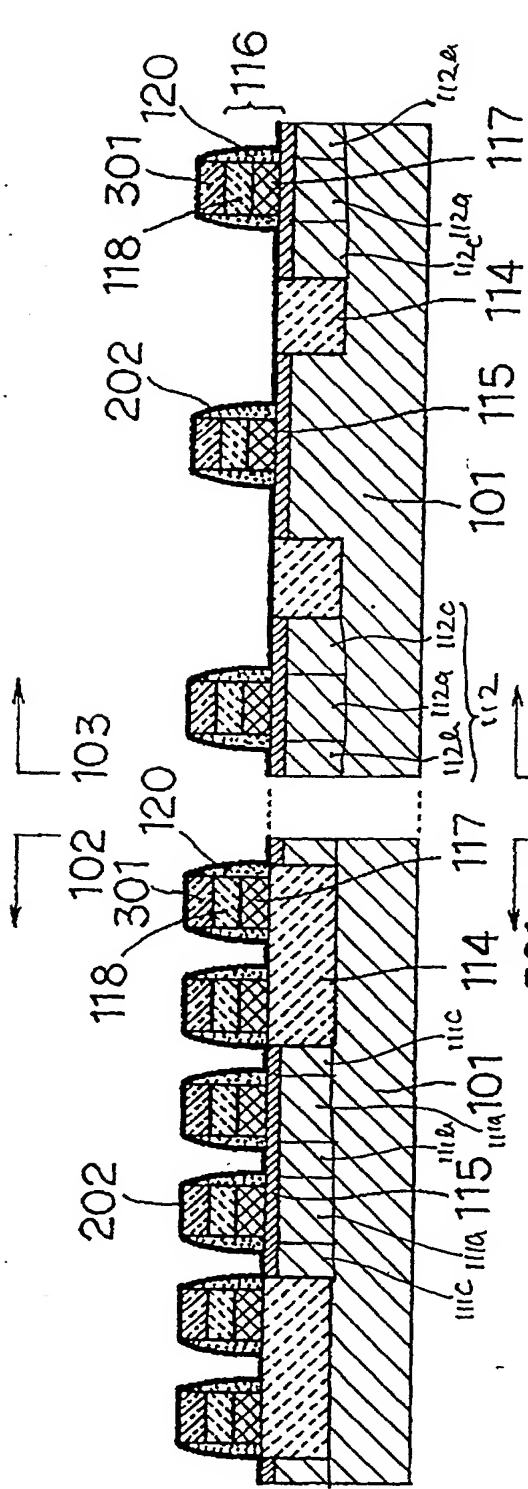


Fig. 19A

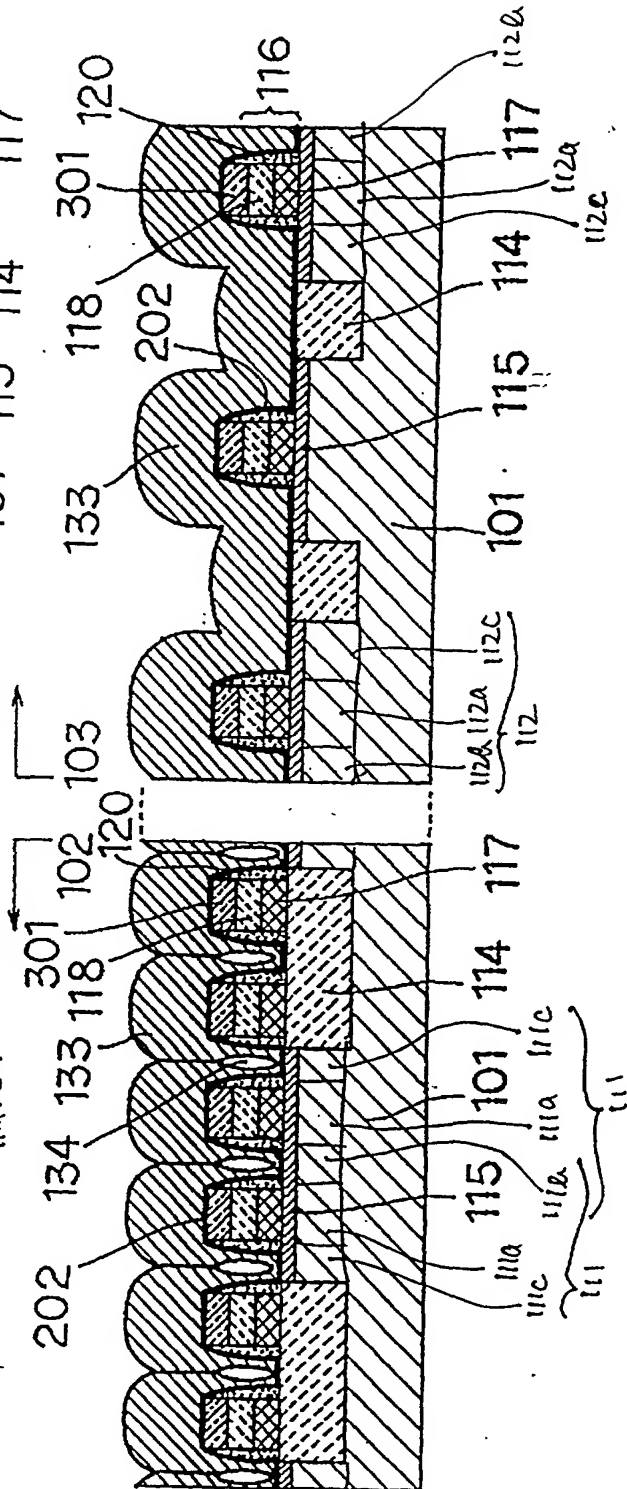


Fig. 19B

Fig. 21

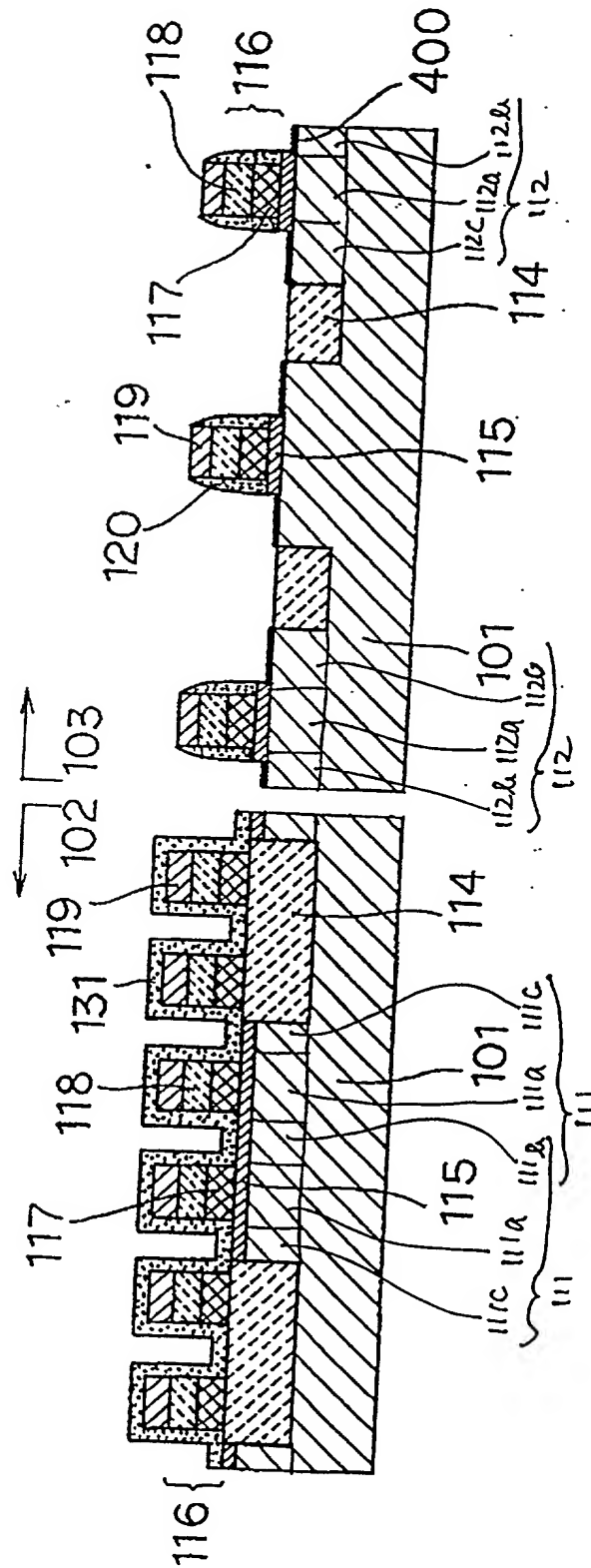
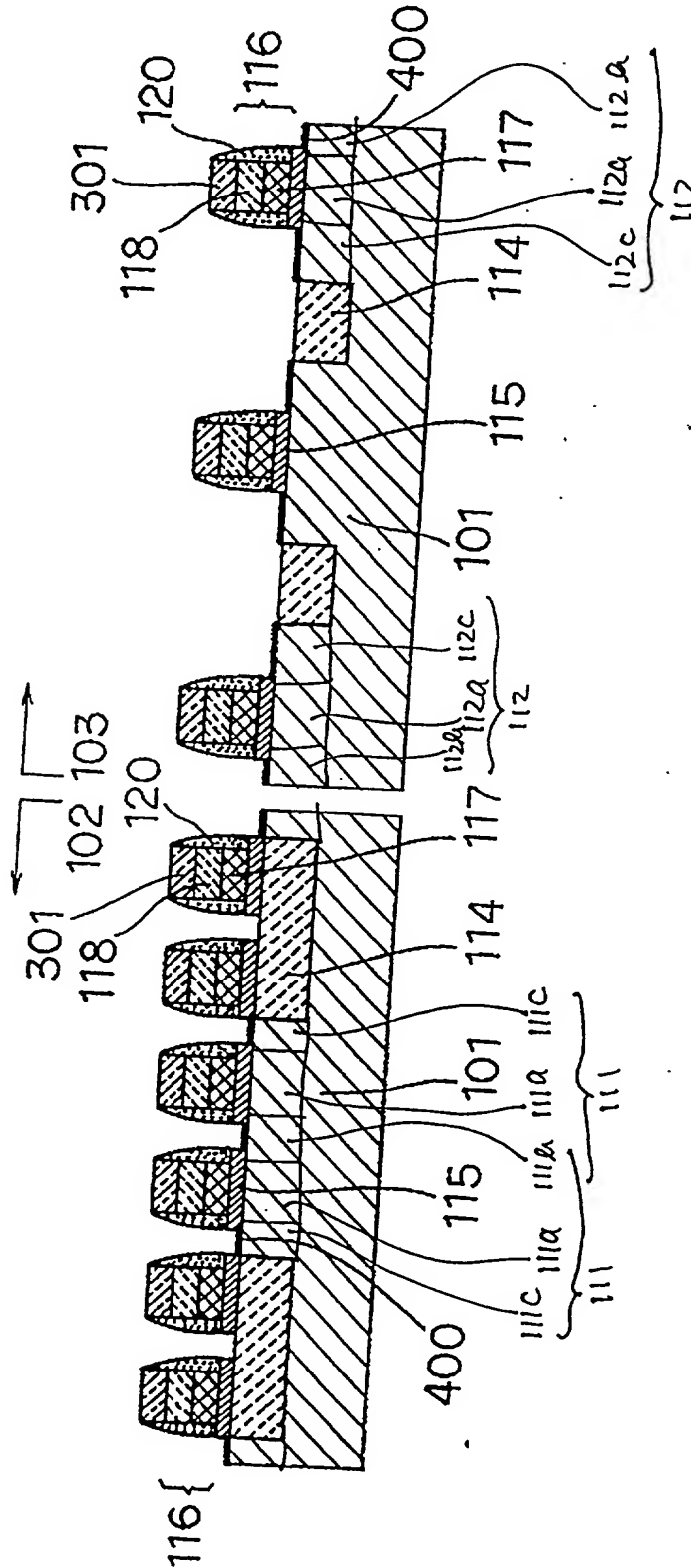


Fig. 22



This cross-sectional view shows a central channel region 101 flanked by side gate regions 115. The channel 101 is composed of layers 111a, 111b, and 111c, with a top layer 111d. The side gates 115 are composed of layers 112a, 112b, and 112c, with a top layer 112d. The device is surrounded by a substrate 102 and a top layer 103. A double-headed arrow indicates the width of the device.

This diagram shows a cross-sectional view of a semiconductor device. It features a substrate with a series of layers and regions. The layers are labeled with reference numerals: 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200. The regions are labeled with reference numerals: 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200. The device includes a series of layers and regions, with some regions being doped or having different properties than others. The layers are separated by interfaces, and the regions are defined by their electrical properties. The device is shown in a cross-sectional view, with the layers and regions labeled with reference numerals.